

Docket No. 503.35255VX4
Serial No. 10/600,574
February 27, 2006

REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have amended each of claims 1 and 2 to recite that the raised portion of the hollow frame member has a substantially uniform width in an extruded direction of the hollow frame member and has a substantially uniform height; and to recite that an abutted portion of the hollow frame member and the another hollow frame member extends in a direction substantially perpendicular to the thickness direction of the hollow frame member. Similarly, Applicants have amended claim 3 to recite that the further raised portion of the second plate has a substantially uniform width in the extruded direction of the hollow frame member and has a substantially uniform height; and have further amended claim 3 to recite that the abutted portion of the hollow frame member and the another hollow frame member extends in a direction substantially perpendicular to the thickness direction of the second plate.

Moreover, Applicants are adding new claims 20-22 to the application. Claims 20-22, dependent respectively on claims 1-3, recite that the hollow frame member is friction stir welded to the another hollow frame member, thereby forming a friction stir welded hollow frame member.

In connection with amendments to previously considered claims, and the newly added claims, note, for example, Figs. 7, 8 and 15, of Applicants' disclosure, together with the description in connection therewith, for example, on pages 9, 10 and 15, of Applicants' specification.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the

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reference applied by the Examiner in rejecting claims in the Office Action mailed October 26, 2005, that is, the teachings of International (PCT) Publication No. WO 95/26254 (Midling, et al.), under the provisions of 35 USC 102 and 35 USC 103.

It is respectfully submitted that the reference as applied by the Examiner would have neither taught nor would have suggested such hollow frame member as in the present claims, having the raised portion of the hollow frame member projecting to an outer side in a thickness direction of the hollow frame member from one side face of the hollow frame member, the raised portion being integrally provided on the end portion of the hollow frame member, the hollow frame member being adapted to be used in friction stir welding and the raised portion being adapted to have a rotary tool inserted therein thus to carry out the friction stir welding, wherein the raised portion has a substantially uniform width in the extruded direction of the frame member and has a substantially uniform height; wherein, during the friction stir welding, material of the raised portion of the hollow frame member fills any gaps, between the hollow frame member and another hollow frame member to be welded to the hollow frame member, which exist when these hollow frame members abut each other; and wherein an abutting portion of the two hollow frame members extends in a direction perpendicular to the thickness direction of the frame member. See claim 1; note also claim 2.

In addition, it is respectfully submitted that the applied reference would have neither disclosed nor would have suggested such a hollow frame member as in the present claims, having a first plate, a second plate substantially in parallel to the first plate and a third plate connecting the first and second plates, with the raised portion (discussed previously) being integrally provided on an end portion of the first plate,

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and this raised portion projecting to an outer side in a thickness direction of the first plate from one side face of the first plate. See claim 2.

Furthermore, it is respectfully submitted that the applied reference would have neither taught nor would have suggested such a hollow frame member as in the present claims, having features as discussed previously in connection with claim 2, and, moreover, wherein at an end portion of the second plate, at a side of the end portion of the first plate having the raised portion, the hollow frame member has a further raised portion which projects to an outer side in a thickness direction of the second plate from one side face of the second plate, this further raised portion also having such substantially uniform width and height, with this further raised portion adapted to have the rotary tool inserted therein so as to carry out friction stir welding; wherein, during the friction stir welding, material of the further raised portion of the second plate fills any gaps, between the hollow frame member and the another hollow frame member to be welded to the hollow frame member, which exist when the hollow frame members abut each other; and wherein the abutted portion of the two hollow frame member extends in a direction perpendicular to a thickness direction of the second plate. See claim 3.

Moreover, it is respectfully submitted that the teachings of the applied reference would have neither taught nor would have suggested the additional feature of the claimed hollow frame member, having aspects as in claims 1-3, and additionally wherein the two frame members are friction stir welded to each other. See claims 20-22.

In addition, it is respectfully submitted that the teachings of the applied reference would have neither disclosed nor would have suggested other features of the present invention as in the remaining, dependent claims, which have features as

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discussed previously in connection with claims 1, 2 and 3, and further including (but not limited to) wherein the first plate (or first and second plates) of the hollow frame member respectively have exposed outer faces, with the raised portion (or raised portion and further raised portion) respectively projecting beyond the exposed outer faces in the thickness direction (see claims 6 and 10); and/or wherein the exposed outer faces are exposed during the friction stir welding (see claims 7, 11 and 14); and/or wherein the thickness direction is a direction perpendicular to the exposed outer faces and/or one side face (see claims 9, 12, 13 and 15); and/or wherein the raised portion is adapted to have the rotary tool inserted therein in the thickness direction so as to carry out the friction stir welding (see claims 16 and 17); and/or wherein various parts of the hollow frame member are made of a same material as in claims 18 and 19.

As described, for example, in the last full paragraph on page 9 of Applicants' specification, by including the raised portion which projects to an outer side in a thickness direction of the hollow frame member (or of the first plate), and extends as further recited in the present claims, the abutted portion of the hollow frame members extending as in the present claims, if there is a gap between the hollow frame members before welding the gap can be filled with the material of the raised portions, improving the appearance and reducing the amount of putty required in order to provide a planar surface. That is, sunken portions or recesses in the weld bead, due to material filling the gaps, when there is no raised portion, can be avoided, thereby improving the product formed.

In addition, by integrally providing the raised portion on the end portion of the hollow frame member, with the raised portion adapted to have the rotary tool inserted therein so as to carry out the friction stir welding, manufacturing of the

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structure being friction stir welded can be easily and effectively achieved (for example, the hollow frame member can be made as a single integral member, e.g., by extrusion, with the raised portion, for example, of a same material as a remainder of the hollow frame member), and friction stir welding with the rotary tool being inserted into this integral raised portion can easily and effectively be performed.

Midling, et al. discloses a technique of friction stir welding, wherein the non-consumable probe used in the friction stir welding has a bottom part 23 (shoulder) (see Fig. 3) exhibiting a concave surface, while the pin 24 of the probe has an outer surface provided with alternately protruding and recessed parts along its longitudinal axis. See the last full paragraph on page 3. Note also the last full paragraph on page 4. In Figs. 5a-e of this published patent document are displayed schematically in fragmentary perspective views, different types of welds provided by the method and probe including, in Fig. 5c, an overlap weld seam.

In the Office Action mailed October 26, 2005, on pages 2 and 3, wherein the Examiner has rejected all of the presently pending claims as anticipated by Midling, et al., the Examiner references an item 27e in Fig. 2, which the Examiner contends is a raised portion which projects to an outer side in a thickness direction (with respect to Fig. 2, item 27c and the opposite side) of the hollow frame member.

However, a close review of Fig. 2 of Midling, et al. does not reveal an item 27e or item 27c or any other item 27. That is, Fig. 2 of Midling, et al. shows a non-consumable probe having a rotational cylindrical body 2 with the bottom part 23 of the rotational cylindrical body 2 exhibiting a concave surface, the probe also including a pin 24 whose outer surface is provided with alternately protruding recessed parts along its longitudinal axis. Clearly, such probe 1 would have neither taught nor would have suggested the hollow frame member as in the present claims,

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having features thereof as recited therein including the raised portion, and advantages thereof as discussed in the foregoing.

Figs. 5a-5e of Midling, et al. are fragmentary, schematic perspective views of different types of the provided weld schemes. In reviewing Figs. 5a-5e, no item 27 (item 27a, b, e or f) is shown. In any event, as discussed previously, it is respectfully submitted that Midling, et al. would have neither taught nor would have suggested the hollow frame member having features as in the present claims, including, inter alia, the raised portion as recited in the present claims, having, inter alia, the substantially uniform width in an extruded direction of the hollow frame member and a substantially uniform height, and/or wherein such raised portion is provided integrally on the end portion of the hollow frame member, and/or wherein an abutted portion of the frame members extends in the direction of substantially perpendicular to the thickness direction of the specified hollow frame member, with advantages thereof; and/or the other features of the present invention as discussed previously, and advantages thereof.

The comment by the Examiner in the first full paragraph on page 3 of the Office Action mailed October 26, 2005, that Applicants claim only a "hollow frame member", and not, for example, a "friction stir welded hollow member", is noted. Note presently added claims 20-22, reciting that the hollow frame member has been friction stir welded to the another hollow frame member, thereby forming a friction stir welded hollow frame member. Thus, claims 20-22 recite the hollow frame member within the context of it being welded to the another hollow frame member, and for additional reasons with respect to the recitation in claims 20-22 that the hollow frame member is a friction stir welded member, it is respectfully submitted that

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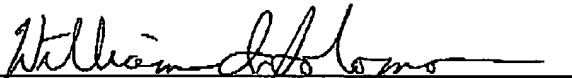
Midling, et al. would have neither taught nor would have suggested such aspect of the presently claimed invention.

It is emphasized that according to the invention as presently claimed, the raised portion of the hollow frame member has a substantially uniform width in the extruded direction thereof, and also had a substantially uniform height; and, moreover, the abutted portion of the two hollow frame member (that is, the claimed hollow frame member and the another hollow frame member to be friction stir welded to the hollow frame member) extends in a direction substantially perpendicular to the thickness direction. With such substantial uniformity of the raised portion, and extending direction of the abutted portion, filling of any gaps between the hollow frame members is facilitated, achieving the advantages according to the present invention.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

Applicants request any shortage of fees due in connection with the filing of this paper be charged to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (case 503.35255VX4), or credit any excess fees paid to such Deposit Account.

Respectfully submitted,
ANTONELLI, TERRY, STOUT & KRAUS, LLP

By 
William I. Solomon
Registration No. 28,565

WIS/ksh
1300 N. Seventeenth Street
Suite 1800
Arlington, Virginia 22209
Tel: 703-312-6600
Fax: 703-312-6666